

REMARKS

This is in response to the Office Action mailed May 7, 2004, in which claims 1-23 were rejected. With this response, amendments have been made to claims 1, 3, 6, 9, 10, 18 and 20. Reconsideration of the application, as amended, is respectfully requested.

CLAIM OBJECTIONS

In Section 1 of the Office Action, the Examiner objected to claims 1, 10, 16, 18 and 20 for various informalities. Applicant has amended each of the claims as suggested by the Examiner. Accordingly, Applicant requests that the objections be withdrawn.

CLAIM REJECTIONS - 35 U.S.C. §112

In Section 3 of the Office Action, the Examiner rejected claims 3, 6 and 9 under 35 U.S.C. §112, first paragraph. Applicant submits that the amended claims 3, 6 and 9 satisfy 35 U.S.C. §112, first paragraph, and requests that the rejections be withdrawn.

CLAIM REJECTIONS - 35 U.S.C. §103

In Section 5 of the Office Action, the Examiner rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over Oswald et al. (U.S. Patent No. 5,457,990) in view of Burger et al. (U.S. Patent No. 5,969,666). Applicant respectfully disagrees with the Examiner's assessment of the cited references.

In particular, Applicant disagrees with the Examiner's finding that column 9, lines 31-53 and column 10, lines 49-53 of Oswald et al. teach the calculating step described in claim 1. The cited sections of Oswald et al. describe the circuitry of positive and negative peak voltage trackers 90 and 92 and their

function as being to "hold the maximum and minimum values of the [reflected] waveform using capacitors c48 and c49 respectively" and to "define positive and negative threshold levels, each being a predetermined fraction of the respective peak value." The positive threshold value is defined by the variable resistor R91 and the voltage divider formed by resistors R92 and R93. The negative threshold value is defined by the variable resistor R96 and the voltage divider formed by resistors R97 and R98. Applicant submits that Oswald et al. merely discloses the ability to set various threshold values rather than how such threshold values are calculated. Therefore, Applicant submits that Oswald et al. fails to disclose the calculating step of claim 1.

Additionally, Applicant disagrees with the Examiner's finding that it would have been obvious to one skilled in the art to modify Oswald et al. to include the microwave pulse as taught by Burger et al. since there is no motivation as suggested to combine the references. The Federal Circuit has stated, "virtually all [inventions] are combinations of old elements." Environmental Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983). The Federal Circuit has also found that rejecting patents solely by finding prior art corollaries for the claimed elements would permit an Examiner to use a claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention, which would be "an illogical and inappropriate process by which to determine patentability." Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996). Accordingly, even seemingly simple changes require a finding of a suggestion in the prior art to make the modification to avoid the improper use of hindsight. In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Applicant disagrees with the Examiner's conclusion that

a motivation to combine the cited references exists based upon on a finding that "Burger suggests that microwave pulses would be advantageous in allowing the determination of the pulse propagation time thereby allowing easier time calculations (column 3, lines 19-31)." In particular, the cited disclosure of Burger et al. fails to make any comparison between the use of a submerged transmission line and the use of a microwave pulse to locate material interfaces, or provide a basis for a finding that one would be "easier" than the other. Additionally, not only do the cited references fail to suggest the interchangeability between the submerged transmission line method of Oswald et al. and the microwave pulse method of Burger et al., neither reference makes any mention of the method used by the other. Applicant submits that such a suggestion or motivation must be provided in order to combine the references.

Accordingly, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness against claim 1, since the cited references fail to disclose all the elements of the claim and there is no suggestion or motivation to combine them. Therefore, Applicant requests that the rejection of claim 1 be withdrawn. Additionally, Applicant submits that claims 1-9, 21 and 22 are allowable as being dependent from allowable base claim 1.

In Section 6 of the Office Action, the Examiner rejected claims 10, 11, 16, 17 and 19-21 under 35 U.S.C. §103(a) as being unpatentable over Oswald et al. in view of Burger et al. and further in view of De Carolis (U.S. patent No. 3,812,422). Applicant respectfully disagrees with the Examiner's assessment of the cited references.

Specifically, as discussed above, Oswald et al. only discloses the setting of a threshold value, but fails to disclose any manner in which that threshold value is calculated.

Accordingly, Oswald et al. and its combination with Burger et al. fail to disclose or suggest any calculation of an "estimated first reflected pulse amplitude", "a first pulse amplitude", or a "first threshold value", as described in independent claims 1, 10 and 17, respectively. Accordingly, even when one assumes that the Examiner's position is correct regarding the teachings of De Carolis, its combination with Oswald et al. and Burger et al. still fails to render independent claims 10 and 17 obvious. Additionally, Applicant submits that there is no motivation to combine the references for the reasons set forth above.

Therefore, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness against independent claims 10 and 17, and requests that the rejections be withdrawn. Additionally, Applicant submits that claim 21 is allowable as being dependent from allowable base claim 1, and requests that the rejection be withdrawn. Similarly, Applicant submits that claims 11 and 16 are allowable as being dependent from allowable base claim 10, and requests that the rejections be withdrawn. Likewise, Applicant submits that claims 19 and 20 are allowable as being dependent from allowable base claim 17, and requests that the rejections be withdrawn.

In Section 7 of the Office Action, the Examiner rejected claims 2, 4-9, 12, 13, 18, 22 and 23 under 35 U.S.C. §103(a) as being unpatentable over Oswald et al. in view of Burger et al. and De Carolis, and further in view of McEwan (U.S. Patent No. 5,609,059). Applicant submits that claims 2, 4-9 and 22 are allowable as being dependent from allowable base claim 1, and requests that the rejections be withdrawn. Similarly, Applicant submits that claims 12, 13 and 23 are allowable as being dependent from allowable base claim 10, and requests the rejections be withdrawn. Likewise, Applicant submits that claim

18 is allowable as being dependent from allowable base claim 17, and requests that the rejection be withdrawn.

In Section 8 of the Office Action, the Examiner rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Oswald et al. in view of Burger et al., and further in view of McEwan. Applicant submits that claim 3 is allowable as being dependent from allowable base claim 1, and requests that the rejection be withdrawn.

CONCLUSION

In view of the above comments and remarks, Applicant submits that the present application is in condition for allowance. Reconsideration and favorable action is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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